Patent Claims:

1. Method for the detection of local displacements and rotations,
c h a r a c t e r i z e d in that a sum signal and additionally a difference signal are formed from two separately generated signals of two magneto-electric transducer elements (W1, W2) which are spaced from each other, and subsequently the sum signal formed and the difference signal formed are OR-operated.

2. Method as claimed in claim 1,
c h a r a c t e r i z e d in that the formed sum signal and the formed difference signal are respectively amplified at such a high rate that substantially square-wave signals are produced.

3. Device for the local frequency doubling of moving incremental scales, in particular for implementing the method as claimed in claim 1 or 2, including an encoder (1a, 1b, 1c), a magnetically sensitive transducer (9, 13), and a signal conditioning stage (6a, 6b) electrically connected with the transducer,
c h a r a c t e r i z e d in that the transducer comprises at least two sensorially active functional groups synchronously using sensorially active groups or sub-groups (W_1, W_2) which are locally offset in relation to each other by a local phase φ in order to scan the moving scale, with said functional groups comprising means enabling at least two independent partial signals to be

produced having mainly the variation according to the functions

$S_1 = V * \sin(\omega t)$ and $S_2 = -V * \sin(\omega t) + \varphi)$.

4. Device as claimed in claim 3,
c h a r a c t e r i z e d in that the signals are processed in two or more separate signal channels which perform an equal amplification and/or filtering operation.

5. Device as claimed in claim 3 or 4,
c h a r a c t e r i z e d in that the signals are sent to two separate computing units, and the signals produced therein are sent to respectively associated subsequent signal amplifiers with an equally high rate of amplification and an equally high switching hysteresis.

6. Device as claimed in claim 5,
c h a r a c t e r i z e d in that the first computing unit continuously produces a signal sum ($S_1 + S_2$), while the second calculation unit continuously produces a signal difference ($S_1 - S_2$).

7. Device as claimed in claim 6,
c h a r a c t e r i z e d in that the signal sum and the signal difference are united with an OR-element to form a new joint signal so that the latter exhibits the double frequency of one of the partial signals and mainly a symmetrical pulse-duty factor between leading and trailing signal edges.

8. Device as claimed in at least any one of claims 3 to 7,
c h a r a c t e r i z e d in that the joint signal that is doubled in its frequency in relation to the partial

signals and produced from signal sum and signal difference is sent to a modulator continuously controlling a current source, with the frequency information of the joint signal being coded into the modulation pattern of the controlled current, said frequency information being decoded in the electronic control unit to which the sensor module is electrically connected, and interpreted as local frequency doubling of the moving incremental scale.

9. Device as claimed in at least any one of claims 3 to 8, c h a r a c t e r i z e d in that it is connected to an electronic control unit (5) by way of a two-wire interface (12).

10. Device as claimed in at least any one of claims 3 to 9, c h a r a c t e r i z e d in that the signals of the partial transducers (W_1, W_2) alternately undergo digital offset compensation by means of an electronic function unit (35) comprising a multiplex unit so that pure alternating current signals remains as output signals (SC1, SC2).

11. Device as claimed in at least any one of claims 3 to 10, c h a r a c t e r i z e d in that there is provision of an electronic functional unit (36) which additionally calculates from the signals SUM = $S_1 + S_2$ and DIF = $S_1 - S_2$ an identification signal for the direction of rotation and sends it to the modulator (6a).

12. Device as claimed in at least any one of claims 3 to 11, c h a r a c t e r i z e d in that the sensorially active functional groups comprise separate transducer elements or partial transducer elements of a joint bridge circuit (21) in particular.

13. Device as claimed in claim 12,
c h a r a c t e r i z e d in that the transducer elements or partial transducer elements are Hall elements and/or magnetoresistive XMR elements.

14. Device as claimed in at least any one of claims 3 to 13,
c h a r a c t e r i z e d in that the signals of the transducer elements are sent to a stage for the digital offset compensation (35).

15. Implementation of the device as an SWT-sensor as claimed in at least any one of claims 3 to 14.